

## CLAIMS

1. Lighting device that comprises:

- a lightguide comprising a plate (1,12), comprising at least two opposed side edges (4,6), one face (3) of which has first irregular diffusing patterns (8) formed in the plate,
- two light sources (13,14) arranged along two opposed side edges of the plate,

characterized by the fact that said device additionally comprises at least one third light source arranged along a third side edge of the plate, and second irregular diffusing patterns formed in the plate, which crisscross with the first diffusing patterns.

2. Device according to claim 1, wherein the first and second diffusing patterns are grooves (10) bordered by two strips of projections and depressions.

3. Device according to claim 2, wherein the grooves extend in two essentially orthogonal directions (Ox, Oy).

4. Device according to claim 3, wherein the plate is rectangular and comprises two pairs of parallel opposed side edges, with the device comprising four light sources (13-18) arranged along the four respective side edges of the plate, where each source consists of a row of LEDs.

5. Device according to any of claims 1 through 4, wherein the light sources have different visible light emission colors or spectra, these sources being LEDs (light-emitting diodes).

6. Device according to any of claims 1 through 5, wherein each of the sources comprises a series of CMS LEDs of essentially white color welded to a printed circuit that surrounds the plate.

7. Device according to any of claims 1 through 6, wherein face (3) has luminance in excess of  $1,000 \text{ cd/m}^2$ , preferably at least equal to  $4,000 \text{ cd/m}^2$ , specifically lying in a range from 5,000 to  $20,000 \text{ cd/m}^2$ .

8. Lightguide comprising a plate (1,12) having two parallel faces (2,3) and at least two opposed side edges (4,6), with a first face (3) having a plurality of first irregular elongate diffusing patterns (8,10), characterized by the fact that said guide comprises second irregular elongate diffusing patterns (9,10) crisscrossing the first diffusing patterns.

9. Guide according to claim 8, comprising a first plurality of first rectilinear diffusing patterns (8,10), parallel with each other and spaced apart at varying distances, and a second plurality of second rectilinear diffusing patterns that are parallel with each other and are spaced apart at varying distances, with said first diffusing patterns extending in a first direction (Ox) that is oblique, preferably orthogonal, to the direction (Oy) of the second diffusing patterns.

10. Guide according to claim 8 or 9, wherein the first diffusing patterns and the second diffusing patterns extend over the first face (3) of the plate and comprise grooves formed in the plate, with the plate comprising components that partially obstruct some grooves.

11. Guide according to claim 8 or 9, wherein the second diffusing patterns extend over a second face (2) of the plate that is distinct from the first face (3) and parallel to it, with the first and second diffusing patterns comprising grooves formed in the plate.

12. Guide according to any of claims 8-11, wherein the diffusing patterns comprise a central depression (10) and peripheral projections (11) arranged on both sides of said depression.

13. Guide according to claim 12, wherein the central depression (10) is in the form of a groove having a depth lying in the range of 10-30 microns.

14. Guide according to claim 12 or 13, wherein the central groove has an average width in the range of 20-60 microns and the average width of the diffusing patterns is in the range of 50-120 microns.

15. Guide according to any of claims 8 through 14, wherein the diffusing patterns form a grid, with the area of the meshes of this grid decreasing in size essentially regularly and monotonically on approaching the center of the guide.

16. Process for manufacturing a lightguide in the form of a plate whose one face (3) comprises a plurality of diffusing patterns (8,10) obtained using a laser beam, wherein said face is exposed to a radiation whose intensity is sufficient (generally lying in a range from  $10^4$  to  $10^7$  cm<sup>2</sup>) to form irregularities in surface area and depth, and so that each of said patterns comprises a central depression and peripheral protrusions arranged on both sides of said central depression, characterized by the fact that the material used is chosen from among glass, polycarbonate and methyl polymethacrylate, and wherein a first network of first essentially parallel diffusing patterns (8,10) is formed, followed by a second network of second essentially parallel diffusing patterns (9,10), which extend obliquely, preferably essentially orthogonally, to the first diffusing patterns.